

Appln. No. 10/011,011  
Docket No. 14XZ00088/GEM-0202

### AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application.

#### Listing of Claims:

1. (canceled).
2. (previously presented): Method according to claim 59 wherein the two three-dimensional images comprise a first three-dimensional simulated image showing the endovascular prosthesis deployed, taking into account the resistance of the lesion, and a second three-dimensional simulated image showing the enlarged lesion following the deployment of the endovascular prosthesis.
3. (original): Method according to claim 2, wherein the first three-dimensional simulated image showing the endovascular prosthesis deployed is obtained from a model of the implant.
4. (original): Method according to claim 3, wherein the model of the implant is obtained from the mechanical characteristics of the prosthesis or from characteristics of the prosthesis and a three-dimensional image of the contracted prosthesis.
5. (original): Method according to one of claim 2, wherein the second three-dimensional simulated image showing the enlarged lesion is obtained from a model of the lesion.
6. (original): Method according to one of claim 3, wherein the second three-dimensional simulated image showing the enlarged lesion is obtained from a model of the lesion.

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7. (original): Method according to one of claim 4, wherein the second three-dimensional simulated image showing the enlarged lesion is obtained from a model of the lesion.

8. (original): Method according to claim 2, wherein the model of the lesion is obtained from the composition and biomechanical properties of the blood vessels and surrounding atheromatous plaques and from a three-dimensional image of the lesion.

9. (original): Method according to claim 3, wherein the model of the lesion is obtained from the composition and biomechanical properties of the blood vessels and surrounding atheromatous plaques and from a three-dimensional image of the lesion.

10. (original): Method according to claim 4, wherein the model of the lesion is obtained from the composition and biomechanical properties of the blood vessels and surrounding atheromatous plaques and from a three-dimensional image of the lesion.

11. (original): Method according to claim 5, wherein the model of the lesion is obtained from the composition and biomechanical properties of the blood vessels and surrounding atheromatous plaques and from a three-dimensional image of the lesion.

12. (original): Method according to claim 3, wherein, for particular parameters concerning the deployment technique, the lesion and the vascular prosthesis, the biomechanical properties of the lesion are taken into account to execute the model of the prosthesis in order to obtain a three-dimensional image of the prosthesis deployed, and then to execute the model of the lesion in order to obtain a three-dimensional image of the enlarged lesion.

13. (original): Method according to claim 4, wherein, for particular parameters concerning the deployment technique, the lesion and the vascular prosthesis, the biomechanical properties of the lesion are taken into account to execute the model of the prosthesis in order to obtain a three-dimensional image of the prosthesis deployed, and

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then to execute the model of the lesion in order to obtain a three-dimensional image of the enlarged lesion.

14. (original): Method according to claim 5, wherein, for particular parameters concerning the deployment technique, the lesion and the vascular prosthesis, the biomechanical properties of the lesion are taken into account to execute the model of the prosthesis in order to obtain a three-dimensional image of the prosthesis deployed, and then to execute the model of the lesion in order to obtain a three-dimensional image of the enlarged lesion.

15. (original): Method according to claim 6, wherein, for particular parameters concerning the deployment technique, the lesion and the vascular prosthesis, the biomechanical properties of the lesion are taken into account to execute the model of the prosthesis in order to obtain a three-dimensional image of the prosthesis deployed, and then to execute the model of the lesion in order to obtain a three-dimensional image of the enlarged lesion.

16. (original): Method according to claim 7, wherein, for particular parameters concerning the deployment technique, the lesion and the vascular prosthesis, the biomechanical properties of the lesion are taken into account to execute the model of the prosthesis in order to obtain a three-dimensional image of the prosthesis deployed, and then to execute the model of the lesion in order to obtain a three-dimensional image of the enlarged lesion.

17. (original): Method according to claim 8, wherein, for particular parameters concerning the deployment technique, the lesion and the vascular prosthesis, the biomechanical properties of the lesion are taken into account to execute the model of the prosthesis in order to obtain a three-dimensional image of the prosthesis deployed, and then to execute the model of the lesion in order to obtain a three-dimensional image of the enlarged lesion.

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18. (original): Method according to claim 9, wherein, for particular parameters concerning the deployment technique, the lesion and the vascular prosthesis, the biomechanical properties of the lesion are taken into account to execute the model of the prosthesis in order to obtain a three-dimensional image of the prosthesis deployed, and then to execute the model of the lesion in order to obtain a three-dimensional image of the enlarged lesion.

19. (original): Method according to claim 10, wherein, for particular parameters concerning the deployment technique, the lesion and the vascular prosthesis, the biomechanical properties of the lesion are taken into account to execute the model of the prosthesis in order to obtain a three-dimensional image of the prosthesis deployed, and then to execute the model of the lesion in order to obtain a three-dimensional image of the enlarged lesion.

20. (original): Method according to claim 3, wherein the model of the prosthesis is established as a function of the radial pressure and resistance forces on the mesh of the prosthesis.

21. (original): Method according to claim 4, wherein the model of the prosthesis is established as a function of the radial pressure and resistance forces on the mesh of the prosthesis.

22. (original): Method according to claim 5, wherein the model of the prosthesis is established as a function of the radial pressure and resistance forces on the mesh of the prosthesis.

23. (original): Method according to claim 6, wherein the model of the prosthesis is established as a function of the radial pressure and resistance forces on the mesh of the prosthesis.

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24. (original): Method according to claim 7, wherein the model of the prosthesis is established as a function of the radial pressure and resistance forces on the mesh of the prosthesis.

25. (original): Method according to claim 8, wherein the model of the prosthesis is established as a function of the radial pressure and resistance forces on the mesh of the prosthesis.

26. (original): Method according to claim 9, wherein the model of the prosthesis is established as a function of the radial pressure and resistance forces on the mesh of the prosthesis.

27. (original): Method according to claim 10, wherein the model of the prosthesis is established as a function of the radial pressure and resistance forces on the mesh of the prosthesis.

28. (original): Method according to claim 11, wherein the model of the prosthesis is established as a function of the radial pressure and resistance forces on the mesh of the prosthesis.

29. (original): Method according to claim 12, wherein the model of the prosthesis is established as a function of the radial pressure and resistance forces on the mesh of the prosthesis.

30. (original): Method according to claim 13, wherein the model of the prosthesis is established as a function of the radial pressure and resistance forces on the mesh of the prosthesis.

31. (original): Method according to claim 14, wherein the model of the prosthesis is established as a function of the radial pressure and resistance forces on the mesh of the prosthesis.

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32. (original): Method according to claim 15, wherein the model of the prosthesis is established as a function of the radial pressure and resistance forces on the mesh of the prosthesis.

33. (original): Method according to claim 16, wherein the model of the prosthesis is established as a function of the radial pressure and resistance forces on the mesh of the prosthesis.

34. (original): Method according to claim 17, wherein the model of the prosthesis is established as a function of the radial pressure and resistance forces on the mesh of the prosthesis.

35. (original): Method according to claim 18, wherein the model of the prosthesis is established as a function of the radial pressure and resistance forces on the mesh of the prosthesis.

36. (original): Method according to claim 5, wherein the model of the lesion is established by means of the finite-element method.

37. (original): Method according to claim 6, wherein the model of the lesion is established by means of the finite-element method.

38. (original): Method according to claim 7, wherein the model of the lesion is established by means of the finite-element method.

39. (original): Method according to claim 8, wherein the model of the lesion is established by means of the finite-element method.

40. (original): Method according to claim 9, wherein the model of the lesion is established by means of the finite-element method.

41. (original): Method according to claim 10, wherein the model of the lesion is established by means of the finite-element method.

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42. (original): Method according to claim 11, wherein the model of the lesion is established by means of the finite-element method.

43. (original): Method according to claim 12, wherein the model of the lesion is established by means of the finite-element method.

44. (original): Method according to claim 13, wherein the model of the lesion is established by means of the finite-element method.

45. (original): Method according to claim 14, wherein the model of the lesion is established by means of the finite-element method.

46. (original): Method according to claim 15, wherein the model of the lesion is established by means of the finite-element method.

47. (original): Method according to claim 16, wherein the model of the lesion is established by means of the finite-element method.

48. (original): Method according to claim 17, wherein the model of the lesion is established by means of the finite-element method.

49. (original): Method according to claim 18, wherein the model of the lesion is established by means of the finite-element method.

50. (original): Method according to claim 19, wherein the model of the lesion is established by means of the finite-element method.

51. (original): Method according to claim 20, wherein the model of the lesion is established by means of the finite-element method.

52. (original): Method according to claim 21, wherein the model of the lesion is established by means of the finite-element method.

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53. (original): Method according to claim 22, wherein the model of the lesion is established by means of the finite-element method.

54. (original): Method according to claim 23, wherein the model of the lesion is established by means of the finite-element method.

55. (original): Method according to claim 24, wherein the model of the lesion is established by means of the finite-element method.

56. (cancelled):

57. (currently amended): A system to simulate the diameter enlargement of a lesion of a blood vessel comprising:

means for providing an endovascular prosthesis;

means for providing a computer equipped with data storage;

means for processing and display;

means for visualizing a three-dimensional simulated image showing the result of interaction between the lesion and the endovascular prosthesis after deployment of the prosthesis, the three-dimensional simulated image being obtained by superposition of two three-dimensional images; and

the means for providing a computer being optionally connected to a means for display;

wherein on an effective deployment of the prosthesis in the lesion, the instantaneous state of the endovascular prosthesis and shape of the lesion are taken into account in order to simulate and visualize in three dimensions a future state of the endovascular prosthesis and of the lesion as a function of possible actions indicated by an operator.

58. (canceled).



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59. (currently amended): A method for simulating the diameter enlargement of a lesion of a blood vessel by an endovascular prosthesis comprising:

determining a model ~~or parametric characteristics~~ of the lesion;

creating a three-dimensional image of the lesion from the model or parametric characteristics;

determining a model ~~or parametric characteristics~~ of the prosthesis when in a non-deployed state;

creating a three-dimensional image of the prosthesis from the model ~~or parametric characteristics~~;

deploying the prosthesis into the blood vessel; and

superimposing the deployed three-dimensional image of the prosthesis and the three-dimensional image of the lesion to provide a combined three-dimensional image to visualize the interaction or involvement between the lesion and the deployed prosthesis;

wherein on an effective deployment of the prosthesis in the lesion, the instantaneous state of the endovascular prosthesis and shape of the lesion are taken into account in order to simulate and visualize in three dimensions a future state of the endovascular prosthesis and of the lesion as a function of possible actions indicated by an operator.

60. (currently amended): A computer program embodied in a computer readable medium comprising program code that, when executed by a computer, causes the computer to perform a method for simulating the diameter enlargement of a lesion of a blood vessel by an endovascular prosthesis, the method comprising: for implementing the method when the program code is read by a computer according to claim 59.

determining a model of the lesion;

creating three-dimensional image of the lesion from the model or parametric characteristics;

determining a model or parametric characteristics of the prosthesis when in a non-deployed state;

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creating a three-dimensional image of the prosthesis from the model or parametric characteristics;

deploying the prosthesis into the blood vessel; and

superimposing the deployed three-dimensional image of the prosthesis and the three-dimensional image of the lesion to provide a combined three-dimensional image to visualize the interaction or involvement between the lesion and the deployed prosthesis;

wherein on an effective deployment of the prosthesis in the lesion, the instantaneous state of the endovascular prosthesis and shape of the lesion are taken into account in order to simulate and visualize in three dimensions a future state of the endovascular prosthesis and of the lesion as a function of possible actions indicated by an operator.

61-63. (cancelled):